

NPIC/D-151/70

**1 JUN 1970**

MEMORANDUM FOR: Assistant Deputy Director for Intelligence *Eup*

SUBJECT : Request for Approval of a Contract with [ ]  
[ ] to Develop a Program to Assess Training Needs  
Associated with Color Photography for [ ] from FY-  
70-71 R&D Funds

1. This memorandum requests approval for the commitment of R&D Funds for a contract. The specific request is stated in paragraph 12.

2. There is every indication that the introduction of the [ ] color acquisition film (SO 242) will provide photo interpretation with a long-awaited additional dimension of information--the spectral characteristics of a target--without the imagery suffering the severe resolution degradation typical of predecessor films. This spectral information holds promise for improving both target identification and target detection by utilizing the potentially enormous range of hue, saturation, and brightness interactions. These color characteristics should aid in the identification of targets (color coding) and in distinguishing a target from its background (target conspicuity). Furthermore, there is reason to expect that technical breakthroughs are imminent for other types of "unconventional imagery" such that before long, a family of special-purpose, high-quality acquisition and duping materials will be available to augment conventional black/white photography.

3. Personnel who process and employ the product must understand how it will affect their normal procedures. Several training courses in "unconventional imagery" have been attempted in the Center for just this reason. With the exception of special purpose briefings developed for a limited, technically homogeneous audience, "broad brush" color training sessions have tended to be over-technical and, accordingly, have proven to be unsatisfactory to large segments of the Center's population. Therefore, a single, comprehensive course does not appear to be the answer to the Center's color training needs.

4. In order to assure maximum utilization of color photography, all Center personnel involved with the acquisition, production, processing, and exploitation of the materials must be grounded in the fundamentals of the

GROUP 1  
Excluded from automatic  
downgrading and  
declassification

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new imagery and techniques related thereto. Each person should appreciate the unique capabilities and liabilities of the several types of photographic emulsions, especially as the new products precipitate a change in his current modus operandi. With few exceptions, the Center and the Intelligence Community are not yet in a position to fully define their color training needs. In many cases, the research necessary to stipulate training requirements has yet to be performed. Consequently, training programs--especially as they relate to intelligence information, as opposed to photo technology--can be expected to rely heavily upon findings of current research.

5. The proposed investigation will consist of a four-part, phased effort. It is designed to:

a. Provide a comprehensive review and documentation covering the literature relevant to the perception of color as it relates to the production, evaluation, and exploitation of color imagery within the Center. This document will include appropriate discussions covering the stimulus and physiological bases of color vision and will apply relevant portions of the existing technical literature in color vision and perception to typical operations and problems.

b. Develop a recommended "color vocabulary," citing practical applications for its use both within the Center and in reporting to components of the Intelligence Community. This is in response to one of our more pressing requirements, the need to agree upon a standard terminology for describing the color signatures of targets. However, the Center and the Community in general have not progressed much beyond the most preliminary stages of investigating the color signatures issue from either an interpretation or requirements standpoint. This "vocabulary" will be so designed as to include and interrelate the physical, psychophysical and psychological terminology and concepts as they apply to Center operations.

c. Make a determination of, and provide a report on, the immediate and future color training needs of Center personnel. This task will

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necessitate having the contractor familiarize himself with Center operations by reviewing on-hand Center documentation outlining the various job description characteristics of Center components.

d. Propose an implementation plan for satisfying those color training needs established under the task described above. The justification for this task is that there is no single training approach that by itself will satisfy all of the color training requirements of the Center. To our knowledge, there is no single Government, industrial, or academic source of professional expertise that could address in sufficient detail the broad spectrum of topics of interest to the Center. It will be, therefore, the Center's prerogative to select the technique and/or source of manpower to provide color training, with the contractor charged with the responsibility of supporting the training program by defining the problem areas and proposing solutions to them.

6. In all cases, the contractor shall emphasize the effect upon Center operations of SO 242 acquisition materials, the dupe stock for reproducing SO 242, and the techniques attendant to the production, reproduction, exploitation and interpretation of SO 242-related photography and information derived therefrom. Proper flexibility will be retained to treat additional materials which may be developed during the time span of the contract. Toward this end, recommended scheduling has been established so that each Task can benefit from the information derived from the preceding efforts. Task 1 (Literature Review) is a prerequisite to the entire contractual effort. It is planned as a seven-month effort to be initiated during the first month of the contract. Task 2 (Color Vocabulary) rests heavily upon, and will begin concurrently with, Task 1. It is expected to require ten months to complete. Task 3 (Determination of Color-Oriented Training Needs) is scheduled to begin no earlier than the third month of the contract and will continue for seven months. Task 4 (Training Program Guidelines), a proposed four-month effort, cannot begin until Task 3 is near completion. For that reason, Task 4 is scheduled to start during the tenth month of the contract.

7. The deliverable items will consist of: (1) a comprehensive literature review of color perception within the context of image interpretation; (2) a glossary of color-related concepts, terminology, and measures specifically defined and written for use in the Center as a reference manual

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and as a training aid for understanding color nomenclature; (3) training (instruction) objectives for the training needs identified, and a description of the relevant training resources and capabilities available within and outside the Center; and (4) a detailed plan for the implementation of the complete color-training system, or of any individual training program.

8. [redacted] was solicited on a sole-source basis for this project because of its broad resources in the color field, from color vision to color photochemistry, as well as in the education and training disciplines. This unusual combination of expertise, along with competence in training technology, gives the proposed contractor a unique over-all capability to address the Center's color training needs. In addition to this general capability, the availability of [redacted] as principal investigator also recommended [redacted] as a sole source. Dr. [redacted] already cleared and familiar with many of the Center's human resource problems, is one of the nation's leading researchers in PI training. His pertinent past experience, as well as his demonstrated perceptive and analytical abilities, will make him an invaluable asset to this color training program.

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9. Split funding is proposed for this project. The total proposed funding level is [redacted] of which would be expended from FY-1970 funds and the remaining [redacted] from FY-1971 funds.

10. Primary follow-on action to be required as a result of this study will be NPIC implementation of the contractor's training recommendations. Each Center Group will be requested to evaluate the recommendations addressed toward its operations. If accepted as valid, these recommendations will be implemented through the development of the appropriate training programs either in-house or via a contractual route. Appropriate coordination with relevant NPIC contracts and with other involved Agency and DOD components will be conducted. The technical risk is considered to be average for study contracts of this type.

11. [redacted] will be the Project Officer for this contract. The sterility code [redacted] is appropriate for this work; the Project Officer will assign security classifications to the reports,

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but in no case shall that classification exceed the Secret level on documents published at the contractor's facility.

12. It is requested that the negotiation with [redacted]  
[redacted] for a contract to conduct the program as described at a cost  
not to exceed [redacted] from FY-1970 funds; the balance of  
[redacted] subject to the availability of FY-1971 funds) be approved.

[redacted]  
ARTHUR C. LUNDAHL  
Director  
National Photographic Interpretation Center

Attachments:

1. Proposal
2. Form 2420

APPROVED: [redacted]  
Assistant Deputy Director for Intelligence

12 JUN 1970

Date

Distribution:

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NPIC/TSSG/RED/ATB: [redacted] (15 May 70)

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